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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,010	04/07/2004	Matthew J. Murray	U03-0134.65	3009

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EXAMINER	
LE, HUYEN D	
ART UNIT	PAPER NUMBER
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/709,010	MURRAY, MATTHEW J.	
	Examiner	Art Unit	
	HUYEN D. LE	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4,5,10,19,27,37,38 and 40* is/are allowed.

6)☒ Claim(s) *1-3,6-9,11-18,20-26,28-36 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 11 is objected to because of the following: before "acoustic", "an" should be changed to --the--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 11 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by An (U.S. patent 6,466,682).

Regarding claims 1, 11 and 34, An teaches a method and apparatus of a transducer assembly that comprises a transducer (12, 13, 14, 15, 16, 17, 18, 19, 20, 20, 33, 34, 35, 36, 37, 38, 39, 40, 45) adapted to excite bending waves in an acoustic radiator (11, 31) to produce an acoustic output, and a coupler (21, 41) including rheological material.

As shown in figure 4 and 6, the coupler (21, 41) is mounted to the transducer (13, 14, 15, 16, 17, 18, 19, 20, 20, 33, 34, 35, 36, 37, 38, 39, 40, 45) and is adapted to be operatively connected to the acoustic radiator (11, 31) to transmit bending wave energy from the transducer through the coupler (21) to the acoustic transducer as claimed (also see col. 3, lines 3-20, col. 4, lines 65-67 through col. 5, lines 1-14 and lines 36-48).

In addition to claim 34, as broadly claiméd, the coupler (21, 41) is adapted to be mounted to the acoustic radiator (11, 31) through the transducer (13-20, 33-40) to transmit bending wave energy from the transducer through the coupler to the acoustic radiator.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-3, 6, 8, 12, 18, 21-23, 26, 28-33 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over An (U.S. patent 6,466,682) in view of Murray (U.S. patent 6,434,237).

Regarding claims 28 and 29, An teaches a method and apparatus of a transducer assembly that comprises a transducer (12, 13, 14, 15, 16, 17, 18, 19, 20, 20, 33, 34, 35, 36, 37, 38, 39, 40, 45) to excite bending waves in an acoustic radiator (11, 31) to produce an acoustic output, and a coupler (21) including rheological material. As shown in figures 4 and 6, the coupler (21, 41) is mounted to the transducer (12, 13, 14, 15, 16, 17, 18, 19, 20, 20, 33, 34, 35, 36, 37, 38, 39, 40, 45) and adapted to be operatively connected to the acoustic radiator (11, 31) to transmit bending wave energy from the transducer through the coupler to the radiator (col. 3, lines 3-20, col. 4, lines 65-67 through col. 5, lines 1-14 and lines 36-48).

Regarding claims 2-3, 6, 12, 21-23 and 28-32, 35-36, An teaches the electromagnet (45) for generating a magnetic field and the fluid (21) having a predetermined degree of viscosity.

An does not teach that the magneto-rheological fluid (21) has a controllable viscosity. However, providing the rheological material having a controllable viscosity is known in the art.

Murray teaches a rheological material (28) that has a controllable visocosity in response to the magnetic field for changing the ability of the magneto-rheological fluid to flow (col. 3, lines 27-56).

Therefore, it would have been obvious to one skilled in the art to provide the magneto-rheological fluid, as taught by Murray, in the An speaker for better controlling the viscosity of the fluid. This would provide a better damping force in the system.

Regarding claims 8, 18 and 26, An does not specifically teach the rheological material (21) that includes foam as claimed. However, providing a rheological material including foam impregnated with a rheological material is known in the art.

Murray teaches rheological material (28) that includes foam impregnated with a rheological fluid (col. 4, lines 5-6).

Therefore, it would have been obvious to one skilled in the art to provide any type of rheological material such as the material that includes foam impregnated with a rheological material, as taught by Murray, for providing a better damping member in the speaker.

Regarding claim 33, An teaches the transducer that is disposed in a mobile terminal (col. 1, lines 6-8). It is obvious that the transducer of An in view of Murray generates an energy field when the mobile terminal is on a call and reduces the strength of energy field when the mobile terminal is not on a call depending on the frequency signals that are applied to the voice coil in the speaker.

6. Claims 7, 9, 13-17, 20, 24-25 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over An (U.S. patent 6,466,682).

Regarding claims 7, 17 and 25, An does not teach that the transducer for the radiator (11) includes a piezoelectric element. However, providing a driver for a speaker including an electromagnetic or a piezoelectric driver is known in the art.

Therefore, it would have been obvious to one skilled in the art to provide any type of transducers or drivers such as a piezoelectric driver for the radiator (11) of the An speaker depending on the applications that are required a small size for the speaker.

Regarding claim 9, An does not specifically teach a closed vessel including a compliant body as claimed. However, An does not restrict the amount of the damping of the magneto-rheological fluid.

Therefore, it would have been obvious to one skilled in the art to provide a closed vessel including a compliant body for containing the rheological material of the An speaker for better controlling the damping force for the system.

Regarding claims 13-16, 20, 24 and 39, An does not specifically teach that the acoustic radiator is at least in part transparent and includes a display or liquid crystal display as claimed. However, An does teach the speaker that is used in the cellular phones and providing an acoustic radiator for the display window is known in the art.

Therefore, it would have been obvious to one skilled in the art to provide the acoustic radiator of An to be used as a display window in the mobile phone that is made of transparent material for greater application.

Allowable Subject Matter

7. Claims 4-5, 10, 19, 27, 37-38 and 40 have been allowed.

Response to Arguments

8. Applicant's arguments filed 01/02/07 have been fully considered but they are not persuasive.

Responding to the arguments about the coupler in the An device, the examiner refers to the Office Action. As shown in figures 4 and 6, the coupler (21, 41) is adapted to be operatively connected to the acoustic radiator (11, 31) to transmit the bending wave from the transducer (13, 14, 15, 16, 17, 18, 19, 20, 20, 33, 34, 35, 36, 37, 38, 39, 40) through the coupler to the acoustic radiator as claimed (also see col. 3, lines 3-20, col. 4, lines 65-67 through col. 5, lines 1-14 and lines 36-48).

Claim 10 has been allowed.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUYEN D. LE whose telephone number is (571) 272-7502. The examiner can normally be reached on 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SINH TRAN can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HL
April 13, 2007

HUYEN LE
PRIMARY EXAMINER